

REMARKS/ARGUMENTS

Reconsideration and allowance in view of the foregoing amendment and the following remarks are respectfully requested.

Claims 1-4 were rejected under 35 USC 103(a) as being unpatentable over Nakae et al. in view of Garvie et al. or King. Claims 1, 2, 4 and 7 were also rejected under 35 USC 103(a) as being unpatentable over Nakae in view of Hata et al. Applicant respectfully traverses these rejections.

An object of the present invention is not to improve the mechanical strength of the other surface of the heater member, as is the case with Garvie and King, but to cause the heater member to have a high reliability against water cracks.

In order to achieve this object, as defined in each of independent claims 1, 5, 7, and 8, when a water drop falls onto the part of the other surface of the heater that has a ten points average roughness being not more than 1.71 μm , the roughness of that part of the other surface of the heater member repels the water drop so that the repelled water drop is rounded, thus reducing a contact area between the other surface of the heater and the water drop.

The Examiner takes the position that it is "well settled that a patent cannot be granted for an applicant's discovery of a result, even though it may be unexpectedly good, which would flow logically from the teaching of the prior art." In this regard, as pointed out by the Examiner, both Garvie and King recognized that polishing alumina surfaces improved their mechanical strength, thereby providing motivation for polishing the alumina surface of Nakae. However, applicants respectfully traverse the Examiner's allegation and conclusion of obviousness.

As noted above, each of applicant's claims 1, 5, 7, and 8 do not have the object of polishing the surface of the heater member so as to improve its mechanical strength, but to set the ten points average roughness of at least part of the other surface of the

heater to 1.71 μm , such that, when a water drop falls onto said part of the other surface of the heater member, the roughness (or more accurately the smoothness) of said part of the other surface of the heater member repels the water drop so that the repelled water drop is rounded (it beads), thus reducing a contact area between the other surface of the heater member and the water drop.

More specifically, even if at least part of the other surface of the heater member is polished to increase its mechanical strength, as taught by Garvie and/or King, if the surface is not polished so as to repel the water drop, the water drop falling onto the other surface of the heater member would widely spread over that other surface. This would mean that the contact area between the other surface of the heater member and the water drop is large, so that tensile stress around the contacting portion is increased. This causes water cracks in the heater member. Thus, a surface that is polished for mechanical strength but not polished so as to meet the limitations of applicant's claims, and repel water, will not achieve the purpose of the invention.

In summary, merely polishing the other surface of the heater member so as to provide a degree of smoothness that provides the desired strength enhancement of Garvie and/or King does not without more teach or provide, polishing so as to repel a water drop when the water drop falls into the other surface.

Further in this regard, as clearly described at Column 6, lines 30-35, Garvie shows the surface roughness as the center line average (CLA).

As fully recognized by one of ordinary skilled in this art, ten points average roughness represents the roughness of a surface more precisely as compared with the center line average (CLA). For this reason, if the surface roughness of the other surface of the heater member is measured using the center line average (CLA), as in Garvie, it would be difficult for even an ordinarily skilled person in the art to accurately grasp whether or not the surface roughness of the other surface of the heater member is such as to repel water when a water drop falls onto that surface.

Thus, Garvie clearly fails to account for the water repellency of the surface roughness, a concept taught only by the present invention.

For all the reasons advanced above, Garvie, King, Hata and Nakae taken singly or in combination, fail to disclose or suggest the subject matter specifically defined in applicant's claims 1, 5, 7 and 8, and, therefore, each of those claims is submitted to be non-obvious from the applied art whether taken alone or in any combination.

Reconsideration and withdrawal of this rejection is solicited.

Claims 5 and 6 were rejected under 35 USC 103(a) as being unpatentable over Nakae in view of Kato et al. and either Garvie or King. Claims 5 and 6 are submitted to be patentable over Nakae, Garvie and King for the reasons advanced above. The Examiner's further reliance on Kato does not overcome the deficiencies of the remaining references noted above. It is therefore respectfully submitted that these claims are also patentable over the applied art.

Claim 8 was rejected under 35 USC 103(a) as unpatentable over Nakae in view of Kato, Garvie or King, and Hata. Applicant respectfully traverses this rejection.

Claim 8 is submitted to be patentable over Nakae, Garvie, King and Hata for the reasons advanced above. The Examiner's further reliance in the combination with Kato does not overcome the deficiencies of the remaining references noted above. It is therefore respectfully submitted that claim 8 is also allowable over the applied art.

All objections and rejections having been addressed, it is respectfully submitted that the present application is in condition for allowance and an early Notice to that effect is earnestly solicited.

YAMAMOTO et al
Appl. No. 10/806,387
September 24, 2008

Respectfully submitted,

NIXON & VANDERHYE P.C.

By: 
Michelle N. Lester
Reg. No. 32,331

MNL:slj
901 North Glebe Road, 11th Floor
Arlington, VA 22203-1808
Telephone: (703) 816-4000
Facsimile: (703) 816-4100